

CLAIMS

1. A process for production of grinding wheels of the thin grinding wheel type provided with an abrasive product, the process being **characterized in that** it comprises a stage consisting of superposing at least two layers of constituent, one of which is a blank (A), which itself is constituted at least from abrasive grains, and of assembling these at least two layers of constituent.
2. A process according to claim 1, **characterized in that** at least one blank (A) comprises at least one layer of constituent without abrasive grains, especially a reinforcing sheet.
3. A process according to claim 1, **characterized in that**, to make the blank (A), an abrasive product formed from abrasive grains provided with a coating constituted by a binder is poured into a mold (16, 17, 170), the level of abrasive product is adjusted to a desired value, and the abrasive product is compressed.
4. A process according to claim 2, **characterized in that**, to make the blank (A), an abrasive product formed from abrasive grains provided with a coating constituted by a binder is poured into a mold (16, 17, 170), the level of abrasive product is adjusted to a desired value, at least one other layer of constituent without abrasive grains, especially a reinforcing sheet, is deposited and the whole is compressed.
5. A process according to any one of the preceding claims, **characterized in that** layers of constituent comprising at least one blank (A) are laid successively one on top of the other to constitute a stack (P), then the stack is heated and subsequently the stack is pressed.
6. A process according to any one of the preceding claims, **characterized in that** the layers of constituent are superposed along an assembly line (2), which is equipped with layer-laying stations (22, 23, 24, 25, 26, 27, 28) and along which the layers being superposed are made to travel in the form of stacks (P), stocks of stacks being constituted in at least certain stations, from which the stocked stacks are taken one by one to superpose thereon a new layer of constituent, and the stack provided with its new layer being evacuated from the station toward the following station.

7. An installation for making grinding wheels of the thin grinding wheel type provided with an abrasive product, **characterized in that** it is provided with at least one machine (1) for making blanks from abrasive grains, an assembly line (2) equipped in particular with stations (22, 23, 24, 25, 26, 27, 28) disposed in succession, at the position of which layers intended to constitute the grinding wheel and comprising at least one blank (A) obtained from the blank-making machine are superposed to constitute a stack (P) of superposed layers, followed by a heating station (29) where the stack of layers is heated, and with at least one pressing machine (3) for compressing the stack (P), this pressing machine having the form of a pressing station at the end of the assembly line or being positioned downstream from the assembly line (2).
8. An installation according to claim 7, **characterized in that** the blank-making machine (1) is provided with a production carousel (10) equipped with molds and specialized working stations comprising a station (12) for pouring an abrasive, a leveling station (13), a pressing station (14), a discharge station (15) and a cleaning station (16), and it is also provided with a storage table (11) for storage of the produced blanks.
9. An installation according to one of claims 7 or 8, **characterized in that** the assembly line (2) is provided with an endless conveyor (20) which carries fixed plates configured to receive removable plates (201) suitable for receiving stacks (P) of elements constituting the grinding wheel.
10. An installation according to one of claims 7 to 9, **characterized in that** the assembly line (2) is provided with a station (21) for laying rings, stations (22, 23, 24, 25, 26, 27, 28) for laying layers of constituent and a heating station (29).
11. An installation according to one of claims 7 to 10, **characterized in that** the assembly line (2) is provided with at least one station comprising a temporary stocking device.
12. An installation for production of grinding wheels, especially of the thin grinding wheel type, **characterized in that** it is provided with at least the following elements:
- a station (100, 200) for filling a mold (170) with the layer or layers of constituent from which a blank (A) is formed,

- a machine (350) for pressing the layer or layers of constituent contained in the mold (170) in order to form the said blank (A),
- an assembly station (400) designed to form a stack (P) of superposed layers from at least one blank (A) and at least one other layer of constituent,
- a pressing machine (550) for compressing the stack (P) and forming the grinding wheel.

13. An installation according to claim 12, **characterized in that** the elements (100, 200, 350, 400, 550) are disposed around a production carousel (700) on which at least one mold (170) is fixed.

14. An installation according to claim 13, **characterized in that** the production carousel (700) is divided into sectors (100, 200, 300, 400, 500, 600) corresponding to working stations for the consecutive operations, and in that each sector comprises at least one position (X) for a mold (170) and at least one position (Y) on which one or more layers of constituent of a grinding wheel can be disposed.

15. An installation according to claim 14, **characterized in that** it comprises a production carousel (700) divided into a plurality of sectors (100, 200, 300, 400, 500, 600), each sector corresponding respectively to the working stations where the following consecutive operations are performed:

- deposition and leveling of abrasive grains coated with a binder in a mold (170) situated at a position (X) of the sector (100), especially by means of a tool (150), and deposition of at least one layer of component, especially a protective layer, at a position (Y) of the said sector,
- deposition of at least one layer of component, especially a reinforcing sheet, on the abrasive grains in the mold (170), and deposition of at least one layer of component, especially a protective sheet and/or a reinforcing sheet, at a position (Y),
- pressing by means of the pressing machine (350) designed to form at least one blank (A) from the layers of constituent contained in at least one mold (170),

- constitution of the stack (P), which consists in taking at least one blank (A) from a position (X) to lay it at a position (Y) and thus constituting at least one stack formed by the layers of constituent disposed beforehand in a location (Y) and by at least one blank (A),
- pressing of the stack (P) situated at position (Y) in order to consolidate a grinding wheel by means of the pressing machine (550),
- evacuation of the grinding wheel or wheels.

16. An installation according to one of claims 7 to 15, **characterized in that** the pressing machine (3, 550) is provided with a carousel equipped with jack-operated presses (31) provided with a movable tool assembly comprising a mold provided with a bottom (311) and a side wall (312) mounted slidably around the bottom, and with a mold support (310), which is fixed to the piston of the jack and to which the bottom and the side wall are interlocked by spring devices, which are designed such that, during extension of the jack, they subject the stack (P) to pressing force while surrounding it with the side wall and, during retraction of the jack, they initiate the start of upward movement of the side wall while the bottom is still against the stack, then the upward movement of the bottom while the side wall continues its upward movement

17. An installation according to one of claims 7 to 16, **characterized in that** the pressing machine (3, 550) is provided with presses (31), each equipped with a support (314) for a removable plate (201) suitable for receiving a stack (P) of layers of constituents of the grinding wheel, and with a cam surface (316) over which there travel rollers, each interlocked with a support (314) to raise the support for the purpose of evacuation of the grinding wheel and of reloading of the removable plate (201) on the assembly line (2).

18. A grinding wheel of the thin grinding wheel type provided with an abrasive product, produced by the process according to any one of claims 1 to 6, **characterized in that** it comprises at least one reinforcing layer pierced by holes in which there is distributed part of the abrasive product, which is formed from abrasive grains.

19. A grinding wheel according to claims 18, **characterized in that** it is provided with a central ring.

20. A grinding wheel according to one of claims 18 or 19, **characterized in that** it is provided with at least one layer of abrasive product, and each layer of abrasive product is sandwiched between two reinforcing layers.

21. A grinding wheel according to one of claims 18 to 20, **characterized in that** its thickness is less than or equal to 2 mm, or even less than or equal to 1 mm.

22. A factory or factory section for production of grinding wheels, especially of the thin grinding wheel type, provided with an abrasive product, **characterized in that** the factory or the factory section is divided into at least two zones, **and in that** one zone is designed for the production of blanks (A) constituted at least from abrasive grains **and in that** the other zone is designed for the assembly of at least one blank (A) and at least one other layer of constituent without abrasive grains in order to constitute a grinding wheel.

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